

Work Order ID 74992

74992

Page 1

October-14-11 10:37:34 AM

Item ID: D212-664-107

Accept

N900040100

Setup Start *NS1*

Revision ID:

Item Name: Crosstube Low Standard Fwd

Stop *NS2*

Start Date: 14/10/2011 Start Qty: 1.00

1

Cust Item ID:

Required Date: 03/11/2011 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: M.L.J

Date: 11/10/11

Tooling:

Date:

Run Start *NR1*

QC:

Date:

SPC (Y/N):

Date:

Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revision Nbr								
D212-664-147	Rev B (DEO)								
100		0.00							
100	DOCUMENT CONTROL								
DC	Memo	0.00							
Document Control	Photocopy bluefile and create labels as per PPP D212-664-107 CHG002								
110		0.00							
110	Packaging								
Packaging	Memo	0.00							
Packaging									
120		0.00							
120	BENDING MACHINE - CROSSTUBES								
CNC Bend 2	Memo	0.00							
CNC Alpha 160 Bender	Bend tube as per Dwg D212-664-107 using CNC bender program 212-107								

D 212 664 107 B 74992

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

W/O:		WORK ORDER CHANGES					
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Process Plan:

Date:

Tooling:

Date:

Run Start *NR1*

QC:

Date:

SPC (Y/N):

Date:

Stop *NR2*

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

130

QC15- Crosstube Dimensional Check

0.00

130

QC

Memo

0.00

Quality Control

140

Crosstubes

0.00

140

Crosstubes

Memo

0.00

Crosstubes

1-Cut tube as per inspection dwg and deburr ends. ***ensure saw is square***

2-Position cuffs on tube ensure proper positioning

3-Drill tube as per dwg using DT8577 location #7 & # 212 ULF using jig DT8548 and DT8549 as per QSI 10

4-Transfer drill rivet holes from cuff into tube.

5-Identify cuff position and Batch # on each and identify tube as per dwg D212-664-107

6-Inspect surface damage

7- Deburr and realodine cuff.

MO

11/10/24

11-10-19

11-10-20

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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Stop *NS2*

Start Date: 14/10/2011 **Start Qty:** 1.00 ***1***

Cust Item ID:

Required Date: 03/11/2011 **Req'd Qty:** 1.00 *** 1 ***

Customer:

Reference:

Run Start *NR1*

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____

Stop *NR2*

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

150 Crosstubes Chemical Conversion

0.00 Mo

150

0.00

HandFXtube

Memo

Hand Finishing Crosstubes

160 QC3- Inspect Part Finish

0.00

160

0.00

QC

Memo

Quality Control

170 QC5- Inspect part completeness to step on W/O

0.00

170

0.00

OC

Memo

Quality Control

W/O:		WORK ORDER CHANGES					
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Work Order ID 74992***74992***

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Stop ***NS2***

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Start Date: 14/10/2011 Start Qty: 1.00

1

Cust Item ID:

Required Date: 03/11/2011 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
180	Outsource process - NDT per QSI038 4.1	0.00							
180									
Outsource2	Memo	0.00							
Outsource process - NDT	Liquid Penetrant Inspection as per QSI 038 Or Issue P/O: <u>15287</u> LPI as per ASTM 1417 Level 2 Attach copy of NDT results to work order								
190	Packaging	0.00							
190									
Packaging	Memo	0.00							
Packaging	Ensure copy of NDT results attached to work order.								
200	QC5- Inspect part completeness to step on W/O	0.00							
200									
QC	Memo	0.00							
Quality Control	Inspect for damage & ensure results are as per Dwg D212-664-107								

CZ 11/10/28 ①

11/10/28 C

11.10-28

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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 Item Name: Crosstube Low Standard Fwd
 Start Date: 14/10/2011 Start Qty: 1.00 ***1*** Cust Item ID:
 Required Date: 03/11/2011 Req'd Qty: 1.00 ***1*** Customer:
 Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
210	Crosstubes	0.00							
210									
Crosstubes	Memo	0.00							
Crosstubes	1-Rivet Cuffs as per Dwg D212-664-147, with Sika flex in Between tube & Cuff A/R SIKAFLEX -241/-291 BATCH: <u>112399</u>								
220	SprayPaint	0.00							
220									
SprayPaint	Memo	0.00							
Spray Painting	1-Prime inside and outside crosstube as per QSI 005 4.2 2-Paint outside crosstube with White Imron as per QSI 005 4.2 PRIME: Start Time: <u>10 00</u> Finish Time: <u>11 00</u> PAINT: Start Time: <u>3 00</u> Finish Time: <u>4 00</u>								

W/O: 74992		WORK ORDER CHANGES						
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector	
11-10-31	210	CR 3212-4-6 rivets too long in 2 locations due to wall thickness install CR 3212-4-5 rivets in these locations CR 3212-4-5 x 2 m 11 08 Thickness = 0.090, Acceptable.	BT	11-10-31	2	P 11.11.01 P/CHZ	S 11/11/01	

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Item Name: Crosstube Low Standard Fwd

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Start Date: 14/10/2011 Start Qty: 1.00 ***1***

Cust Item ID:

Required Date: 03/11/2011 Req'd Qty: 1.00 ***1***

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start ***NR1***

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
230 *230* QC Quality Control	QC14- Inspect Spray Paint Memo Wrap in plastic bag to protect from scratches	0.00 0.00				<i>M</i>	<i>11</i>	<i>11</i>	<i>01</i> (1)
240 *240* Crosstubes Crosstubes	Crosstubes Memo 1- Assemble as per Dwg D212-664-147 1-Abrade mating surfaces of support and crosstube with 400 grit sandpaper, clean the area with 4105S wash 'n' wipe 2-Install supports with Proseal 890 per DSI9563 and QSI 015 A/R Proseal 890 Batch: <i>119396</i> 3- Torque bolts as per dwg <i>11/11/10</i> (1)	0.00 0.00				<i>M</i>	<i>11</i>	<i>11</i>	<i>09</i> (1)

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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NOTE: Date & initial all entries

74992

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N900040100

Setup Start *NS1*

Stop ***NS2***

Start Date: 14/10/2011 **Start Qty:** 1.00 ***1***

Required Date: 03/11/2011 **Req'd Qty:** 1.00 ***1***

Reference:

Run Start *NR1*

Stop ***NR2***

250 QC5- Inspect part completeness to step on W/O

0.00

0.00

Memo

Solution

0.00

0.00

Memo

SP 11-11-11.

0.00

0.00

Memo

$\delta u / u$

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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Work Order ID 74992

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Item ID: D212-664-107 Accept ***N900040100*** Setup Start ***NS1***
 Revision ID: Stop ***NS2***
 Item Name: Crosstube Low Standard Fwd
 Start Date: 14/10/2011 Start Qty: 1.00 ***1*** Cust Item ID:
 Required Date: 03/11/2011 Req'd Qty: 1.00 ***1*** Customer:
 Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
270	Packaging	0.00							
270									
Packaging	Memo	0.00							
Packaging	Identify and pack for shipping as per PPP D212-664-107								
280	QC21- Final Inspection - Work Order Release	0.00							
280									
QC	Memo	0.00							
Quality Control									

Revc

11/11/11

11/11/14
mf 11-11-11

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
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NOTE: Date & initial all entries

Picklist Print

October-14-11 10:37:39 AM

Page 1

Work Order ID: 74992

74992

Parent Item: D212-664-107

D212-664-107

Parent Item Name: Crosstube Low Standard Fwd

Start Date: 14/10/2011

Required Date: 03/11/2011

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP Rev:A New Issue 07.09.12 EC verified by: JLM
 IPP Rev:B ECN 1100 08-01-11 DD verified by: EC
 IPP Rev:C Ecn 1121 08-02-25 DD Verified by:ec IPP Rev:D
 10.05.27 added pick kit DD verf:EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
---------------------------------	------------------------	---------------	-------------	---------------------	------------------	-----------------	--------------------	----------------	-------------	--------------	---------------	----------------	--------

D212-664-107TRN		Manufactured	No			140	Each	1.0000	1	1			
-----------------	--	--------------	----	--	--	-----	------	--------	---	---	--	--	--

D212-664-107TRN

Crosstube Turning Detail

**

Location

Loc Qty

Loc Code

LG

67429

1

1

D3659-1

Manufactured No

220

Each

3.0000

2

2

D3659-1

CUFF

**

Location

Loc Qty

Loc Code

ST477

67005

3

3

CR3212-4-06

Purchased No

240

Each

730.0000

44

44

CR3212-4-06

CHERRY RIVET

**

Location

Loc Qty

Loc Code

ST311

112492

112794

730

18

712

① JW 11-10-18

ET 11-10-20

ET 11-10-31

x44

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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Page 2

Work Order ID: 74992

74992

Parent Item: D212-664-107

D212-664-107

Parent Item Name: Crosstube Low Standard Fwd

Start Date: 14/10/2011

Required Date: 03/11/2011

Start Qty: 1.00

Required Qty: 1.00

D3595-063-450

Manufactured No

240

Each

133.5600

4

4

D3595-063-450

RUBBER CUSHION

**

M 11-11-09

Location

Loc Qty

Loc Code

LG

107.76

67353

3

68893

6

70113

0.56

71354

0.2

74113

98

LG055

25.8

72967

25.8

MS21920-25

Purchased No

240

Each

100.0000

4

4

MS21920-25

Clamp(per MIL-DTL-8783C)

**

M 11-11-09

Location

Loc Qty

Loc Code

LG

44

113281

0

113282

0

118142

4

118183

40

LG050

56

116264

2

117998

4

119227

50

D2893-1

Manufactured No

240

Each

18.0000

2

2

D2893-1

2.75 Support

**

M 11-11-09

Location

Loc Qty

Loc Code

LG052

18

72586

2

72865

16

B# 74768

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Shop Packet Print

Page 2

W/O:		WORK ORDER CHANGES					
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Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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D212-664-107

Parent Item Name: Crosstube Low Standard Fwd

Start Date: 14/10/2011

Required Date: 03/11/2011

Start Qty: 1.00

Required Qty: 1.00

D3428-1

Manufactured No

260

Each

25.0000

1

1

**

SP

D3428-1

Placard

Location

Loc Qty

Loc Code

ST053

25

72048

5

73498

20

Purchased

No

260

Each

64.0000

4

4

**

SP

AN6-35A

AN6-35A

BOLT

Location

Loc Qty

Loc Code

ST343

64

118422

34

118838

30

Purchased

No

260

Each

65.0000

4

4

**

SP

AN6-36A

AN6-36A

Bolt

Location

Loc Qty

Loc Code

ST343

65

118012

1

118422

34

118838

30

4x

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D212-664-107

Parent Item Name: Crosstube Low Standard Fwd

Start Date: 14/10/2011

Required Date: 03/11/2011

Start Qty: 1.00

Required Qty: 1.00

MS21042L6

Purchased

No

260

Each

1,792.000

6

6

MS21042L6

**

Nut

Location

Loc Qty

Loc Code

ST300

792

117677

136

118384

8

118927

48

118968

600

ST518

1000

119075

1000

AN960JD616

NAS1149D0663J

Purchased

No

260

Each

0.0000

18

18

AN960JD616

**

Washer

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

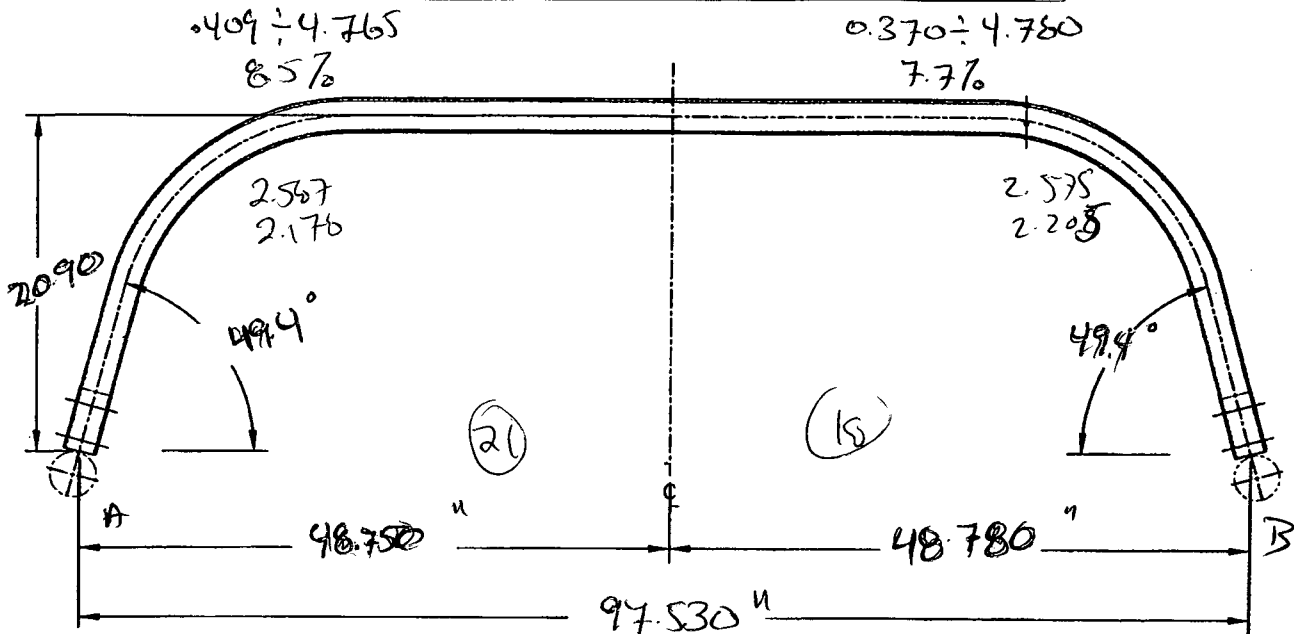
Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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DART AEROSPACE LTD		Work Order:	74992
Description: Crosstube Low Fwd (205/212/412)		Part Number:	D212-664-107
Inspection Dwg: D212-664-147 Rev: B		Page 1 of 1	

Required Dimension	Min	Max
Height	20.79	21.05
1/2 Span	48.55	48.81
Angle	49	52
Total Span	97.1	97.62



Comments	
Since A = 8.5% crushing @ 21 passes	
Since B = 7.7% crushing @ 15 passes	
(see not 10)	

QC15 Inspection	S
Date	11/10/13

Rev	Date	Change	Revised by	Approved
A	08.02.29	New Issue	KJ/JM	
B	10.01.21	Dwg Rev updated	KJ	

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Item	Qty -147	Qty -147B	Part Number	Description
1	X		D212-664-147	CROSSTUBE ASSEMBLY (205/212/412 LOW FWD)
2		X	D212-664-147B	CROSSTUBE ASSEMBLY (214 LOW FWD)
3	1	1	D6019-128	CROSSTUBE
4	2	2	D2893-1	SUPPORT
5	4	4	D3595-063-450	RUBBER CUSHION
6	2	2	D3659-1	CUFF
7	4	4	MS21920-25	CLAMP (OR MS21920-26)
8	44	44	CR3212-4-06	RIVET (OR M7885/3-4-06)
9	A/R	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)
10	A/R	A/R	SIKAFLEX-241/-291	SEALANT (OR PROSEAL 890 OR MIL-S-8802 CLASS B2 SEALANT)

GENERAL NOTES:

- MATERIAL: MANUFACTURED FROM D6019-128
FINISHED LENGTH = 126.528±0.020 (BEFORE BENDING/TRIMMING)
- FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- UNITS: INCHES UNLESS OTHERWISE NOTED.
- BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- IDENTIFICATION: SCRIBE DART PART NUMBER "D212-664-XXX" AND BATCH NUMBER ON INSIDE OF CUFF USING VIBRATING STYLUS.
- WEIGHT: D212-664-147 = 24.2 lbs (PER IIN-D212-664)
D212-664-147B = 24.2 lbs (PER IIN-D212-664)
- PART IS SYMMETRIC ABOUT CENTERLINE.
- WHEN MACHINING TAPER, RUN CUTTER OFF PART. BLEND OUT EDGE LONGITUDINALLY. TRANSITION SHOULD BE SMOOTH.
- BEND PROGRESSIVELY WITH A MINIMUM OF 8 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D. EXCEPT UP TO 10% IS ALLOWED IN AREA NOTED.
- LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- INSTALL D2893-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2893-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- INSTALL MS21920-25 CLAMPS (OR -26) WITH D3595-063-450 RUBBER CUSHIONS TO SECURE THE D2893-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE OF CROSSTUBE SUPPORT.
- EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.
- INSTALL D3659-1 CUFF AFTER CHEMICAL CONVERSION COAT BUT BEFORE PAINT, WITH A LAYER OF SIKAFLEX-241/-291 OR PROSEAL 890 OR MIL-S-8802 CLASS B2 SEALANT BETWEEN CUFF AND CROSSTUBE. SEAL EDGE OF CUFF TO ENSURE NO GAPS.
- TOUCH-UP HOLES WITH CHEMICAL CONVERSION COAT.

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 74992 M.C.J
11/10/14

DEO ATTACHED

Per ECN #1164
11.07.20
UNDER REVIEW
11/10/14

RELEASED
2009-10-29

B	REVISE GENERAL NOTES/PART LIST; UPDATE TO CURRENT STANDARDS; ADD -147B (ZN C4-2, D4-2)	RF	09.09.30
A	NEW ISSUE	CP	07.07.07
REV.	DESCRIPTION	BY	DATE
DESIGN	RF	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	RF	DRAWING NO.	REV. B
CHECKED	RF	D212-664-147	SHEET 1 OF 4
MFG. APPR.	RF	TITLE	SCALE
APPROVED	RF	CROSSTUBE (205/212/412 LOW FWD)	NTS
DE APPR.	RF	COPYRIGHT © 2007 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	
DATE	09.09.30		

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

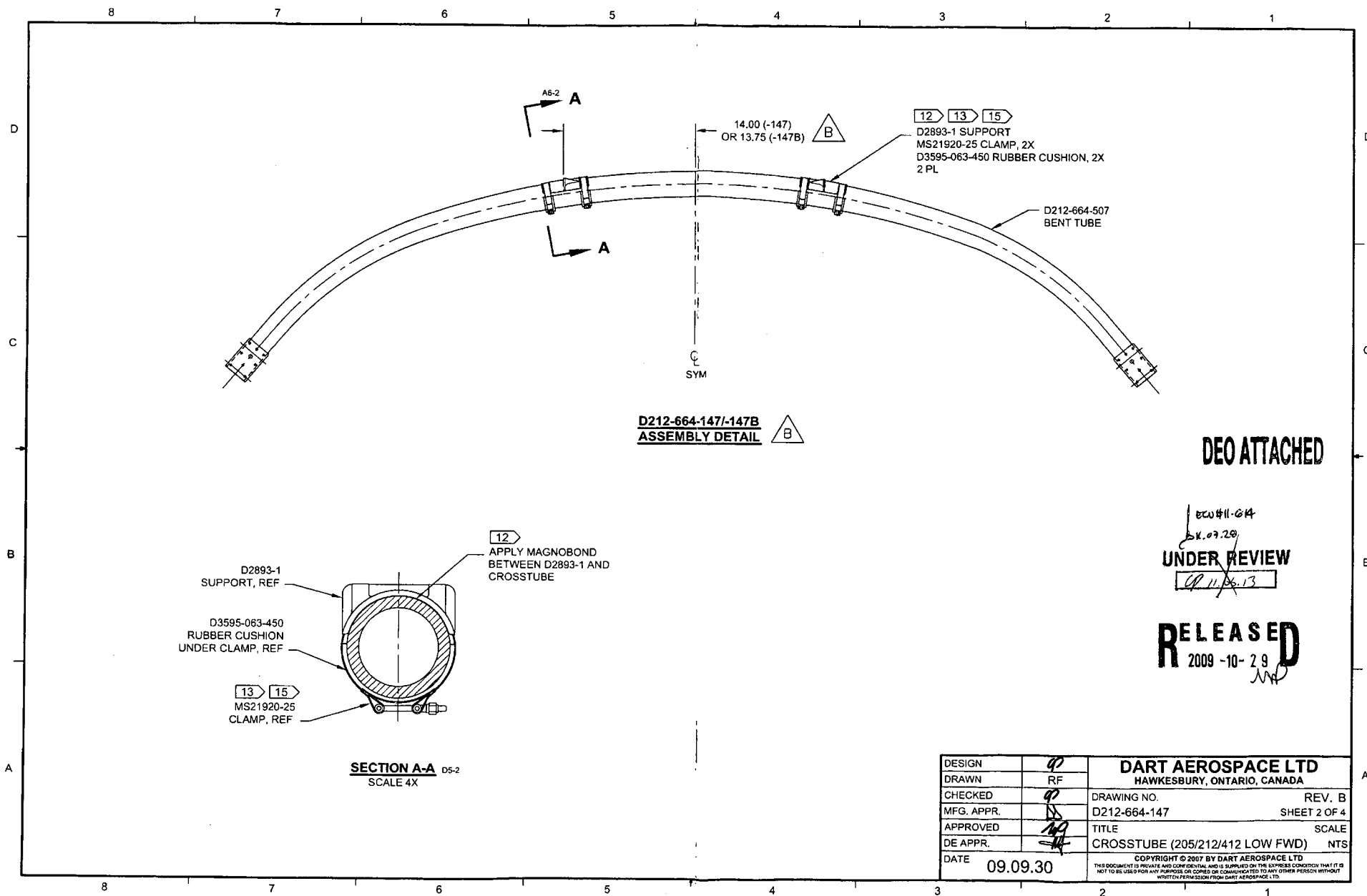
Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

74992



W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

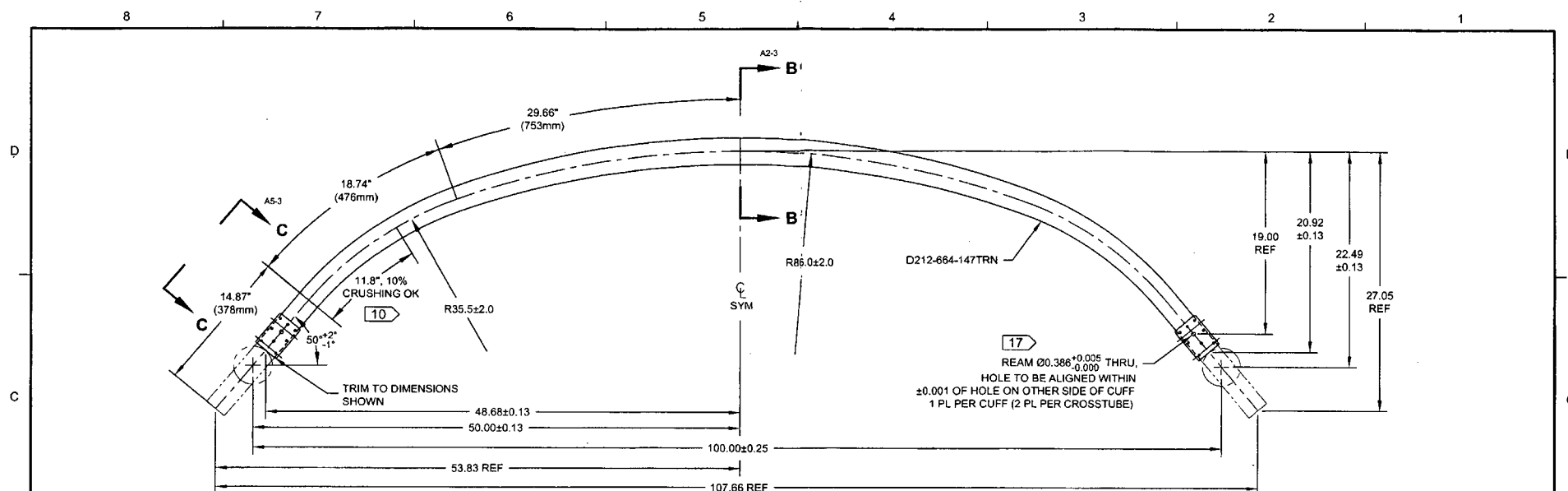
Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

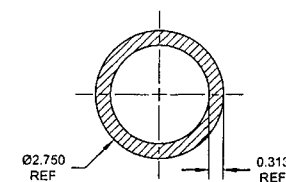
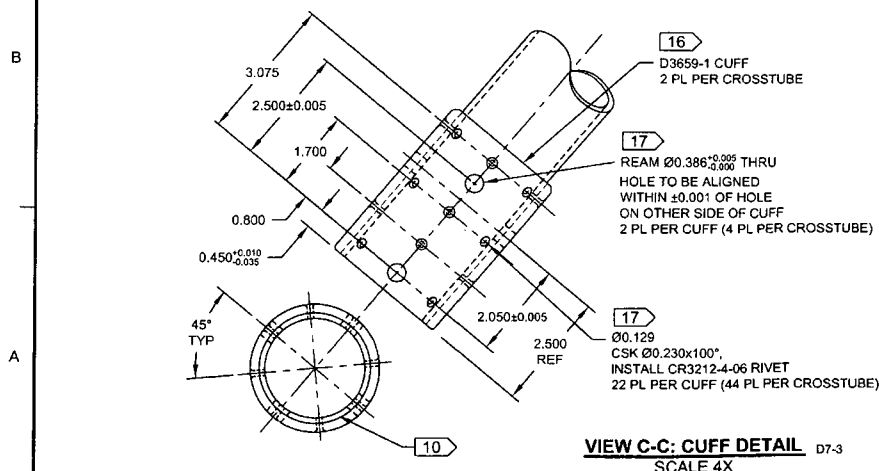
NOTE: Date & initial all entries

74992



D212-664-507
BENDING AND DRILLING DETAIL 10 B

DEO ATTACHED



UNDER REVIEW
09.09.30

RELEASED
2009-10-29

DESIGN	RF	DART AEROSPACE LTD	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	RF	DRAWING NO. D212-664-147	REV. B
MFG. APPR.	RF		SHEET 3 OF 4
APPROVED	RF	TITLE	SCALE
DE APPR.	RF	CROSSTUBE (205/212/412 LOW FWD)	NTS
DATE	09.09.30	COPYRIGHT © 2007 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

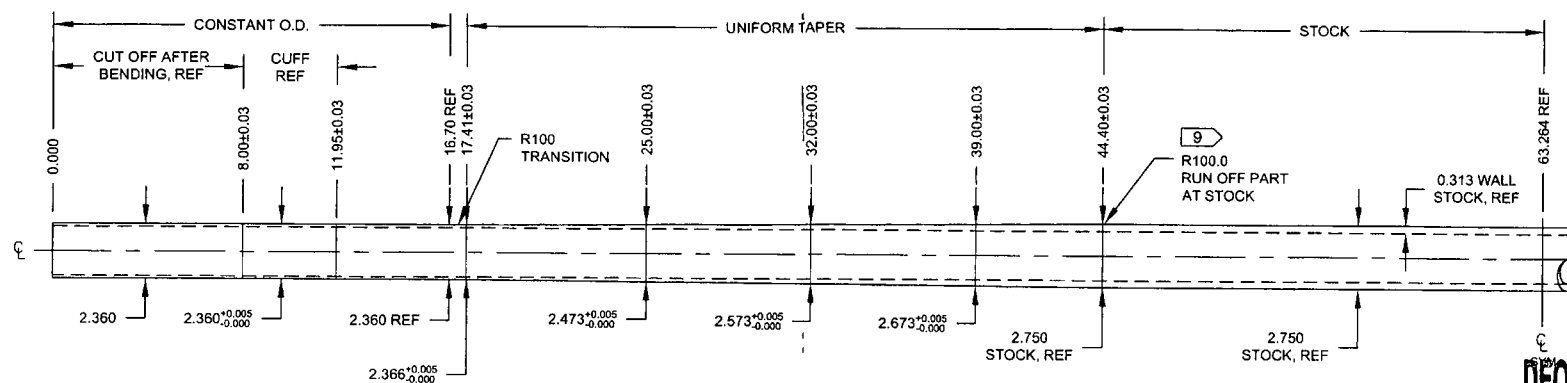
Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

74992



D212-664-147TRN
TURNING DETAIL

DEO ATTACHED

CCO #1-614
 11.07.26
 UNDER REVIEW
 11.06.13

RELEASED
 2009-10-29

DESIGN	91	DART AEROSPACE LTD	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	91	DRAWING NO.	REV. B
MFG. APPR.	DS	D212-664-147	SHEET 4 OF 4
APPROVED	91	TITLE	SCALE
DE APPR.	91	CROSSTUBE (205/212/412 LOW FWD)	NTS
DATE	09.09.30	COPYRIGHT © 2007 BY DART AEROSPACE LTD	
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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

DRAWING NO. D212-664-147	TITLE CROSSTUBE ASS'Y (205 LOW FWD)	REV. B	DART AEROSPACE LTD ENGINEERING ORDER		D.E.O. NO. D212-664-147-B-1	SHEET NO. SHEET 1 OF 1	SCALE NTS
DRAWN <i>qp</i>	CHECKED <i>ASS</i>	MFG. APPR. <i>183</i>	APPROVED <i>MP</i>		DE APPR. <i>MP</i>		
DATE 11.07.15	DATE 11.07.20	DATE 11.07.21	DATE 11/07/21		DATE 11.07.21		

PURPOSE:

REPLACE MAGNOBOND WITH PROSEAL.

CHANGE:

IS:

Item	Qty -147	Qty -147B	Part Number	Description
9	A/R	A/R	PROSEAL 890 B-2	SEALANT, AMS-S-8802 CLASS B-2

WAS:

9	A/R	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)
---	-----	-----	----------------	---

NOTE 12 & 15, SHEET 1 IS AMENDED AS FOLLOWS:

IS:

- 12) TO INSTALL D2893-1 SUPPORT: ABRASE MATING SURFACE OF SUPPORT AND CROSSTUBE WITH 180-GRIT SANDPAPER AND REMOVE RESIDUE WITH MEK (OR EQUIVALENT). APPLY A 0.04" TO 0.07" THICK LAYER OF PROSEAL 890 CLASS B-2 (OR AMS-S-8802 CLASS B-2) SEALANT TO MATING SURFACE OF SUPPORT.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. **PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.**

WAS:

- 12) INSTALL D2893-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2893-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

RELEASED
2011-07-28
VW

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

RAPPORT D'ESSAI NON DESTRUCTIF

(SUITE)

PAGE 2 DE 2



CLIENT DART Aerospace DATE 27 octobre 2011 HEURE ☒ AM ☐ PM
 ATTENTION Mme Linda Lavelle NO. TRAVAIL ACUREN 188-11-02376
 RÉSULTATS (☐ METRIQUE ☐ IMPÉRIAL)

Work	Order	ID	Crosstube	Item	ID	Data
		74992				D 212-664-107
"	"	74991	"	"	"	D 212-664-207
"	"	75277	"	"	"	D 212-664-207
"	"	75490	"	"	"	D 212-664-207
"	"	75314	"	"	"	D 212-664-107
"	"	75313	"	"	"	D 212-664-107
"	"	74976	"	"	"	D 212-664-107
"	"	72743	"	"	"	D 407-667-205
"	"	72742	"	"	"	D 407-667-205
"	"	75310	"	"	"	D 212-664-107
"	"	75540	"	"	"	D 212-664-207
"	"	75542	"	"	"	D 212-664-207

All the crosstubes (12) Accepted
 No indication as found.

7T 11-10-28

Etendue des Services

L'entente selon laquelle le Groupe Acuren Inc. exécute les services ne concerne que les énoncés par écrit. En aucune circonstance ces services ne s'étendent au-delà de l'exécution des services demandés. Il est entendu que toutes les descriptions, les observations et les expressions d'opinions faites par Acuren reflètent les opinions ou les observations de l'entreprise fondées sur l'information et les hypothèses fournies par le propriétaire/opérateur, et elles ne constituent pas des déclarations ou des garanties ou ne peuvent être interprétées comme constituant. Le Groupe Acuren Inc. n'assume aucune des responsabilités du propriétaire/opérateur, et le propriétaire/opérateur conserve la responsabilité entière des décisions prises en matière d'ingénierie, de fabrication, de réparation et d'usage à partir de l'information ou des données fournies par Acuren en rapport avec les services décrits dans les présentes ne peuvent excéder le coût des services rendus.

Norme de Diligence

Dans l'exécution des services, le Groupe Acuren Inc. applique le degré de diligence, le soin et la compétence normalement exercés dans des circonstances semblables par d'autres fournisseurs de ce type de services opérant dans la même localité ou dans une localité similaire. Aucune autre garantie, implicite ou explicite, n'est faite ou voulue par le Groupe Acuren Inc.

SIGNATURES

REPRÉSENTANT À LA CLIENTÈLE

TECHNICIEN (SIGNATURE)

NAME (MOULÉE):

NIVEAU CGSB

2

NIVEAU SNT

2

No. ENREG. CGSB

12205

NIVEAU CGSB

NIVEAU SNT

No. ENREG. CGSB

FTJ #:

RAPPORT REVISÉ PAR:

NOM

INITIALES

**ACUREN****RAPPORT D'INSPECTION PAR RESSUAGE**

P - 11198.

PAGE 1 DE 2

CLIENT: Dant Aerospace DATE: 27 octobre 2011 HEURE: AM ☐ PM ☐

ATTENTION: Mme Linda Lucelle N° TRAVAIL: 188-11-02376

ADRESSE: 1270 Aberdeen St, Hawkesbury, Ont, K6A 1K7 N° CLIENT POWO: 15-287

PROJET: Cross tubes inspection (Fluorescent Penetrant) SITE DE TRAVAIL: Dant Usine

ITEM(S) EXAMINÉ: 12 x Cross tubes ACCEPTATION STD: ASME 1417/OST 038 DATE/RÉV.: 2005

DESCRIPTION DES TRAVAUX: See on bottom N° PROCÉDURE: LT-002 DATE/RÉV.: 2007 N° TECHNIQUE: LT-002 DATE/RÉV.: 2007

N° ITEMS: See on bottom MATÉRIEL: Aluminium ÉPAISSEUR: Union

DESCRIPTION: Inspection 100% (Penetrant Fluorescent) on surface external on 12 cross tubes

DÉTAILS DES INSPECTIONS

MÉTHODE: ☒ FLUORESCENT ☐ VISIBLE ☒ LAVABLE À L'EAU ☐ MÉTHODE DISSOLVANT ☐ PRÉ-ÉMULSIONNANT

MARQUE: Magnaflux LUM. NOIRE S/N: 16440 PUISS. > 1000 μ W/cm² ☐ AMBIANT < 2 fc

PÉNÉTRANT: Zyglo ZLC7 TEMPS PÉNÉTRATION MIN.: 10 MIN. ÉQUIP. LUMIÈRE ☐ LAMP. POCHÉ ☐ LAMP. CULASSE ☐ PUISS. > 100 fc @ SURFACE

DISSOLVANT PÉNÉTRANT: H2O TEMPS SÉCHAGE MIN.: >10 MIN. AUTRES: Modèle LABINO

RÉVÉLATEUR: SKD-52 TEMPS PÉNÉTRATION MIN.: 10 MIN. MÈTRE LUM. N/S DATE CAL DUE

TYPE RÉVÉLATEUR ☒ NON AQUEUX ☐ AQUEUX ☐ SEC

SURFACE INSPECTÉE

CONDITION SURFACE ☐ MEULÉE ☐ SOUDÉE ☐ MACHINÉE ☐ GRENAILLÉE ☒ MÉTAL PROPRE

TEMPÉRATURE SURFACE ☐ < -4°C/20°F ☐ -4°C/20°F DE 10°C/50°F ☒ 10°C/50°F DE 52°C/125°F ☐ > 52°C/125°F

RÉSULTATS- ☐ MÉTRIQUE ☐ IMPÉRIAL

See other sheet for results

11-0-28

Étendue des Services

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SIGNATURES

REPRÉSENTANT: Matt Murdoch FTJ#

TECHNICIEN (SIGNATURE): Tierre-Luc Dulong RAPPORT RÉVISÉ PAR:

NOM (MOULÉ): Tierre-Luc Dulong NOM: INITIALS:

ONGC NIVEAU 2 SNT NIVEAU 2 ONGC NIVEAU SNT NIVEAU

ONGC N° REG. 12205 ONGC N° REG.

Part Number D212-664-107

Part Number DET-204-10
Description CROSS TUBE LOW FWD (204/205/212)

H:\forms\engineer\approved forms\CHGREC revA

